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COMMENT AND CRITICISM.

THE AWARD by the Royal society of London of the highest honor in its gift, the Copley medal, to Professor Carl Ludwig of Leipzig, has been the cause of much rejoicing among English physiologists. Since John Hunter received the medal nearly one hundred years ago (1787), no physiologist has so merited it by fruitful, lifelong devotion to the advancement of knowledge. Ludwig's first research was published in 1844; and still every year important investigations, inspired, directed, and often personally executed by him, are published from his laboratory. His work extends over nearly every branch of physiology, but we can here refer only to one or two of his more epoch-marking works. In 1850, by the discovery of secretory nerves, he added a new territory to the domain of experimental physiology. That wonderful series of researches on the circulatory mechanism, which commenced in 1847 with a paper on the influence of the respiratory movements on the blood-flow in the aorta, has continued to this day, almost every year adding something from the master's hand. The introduction of the graphic method into physiological experimentation we also owe to Ludwig; and he who would ask what the value of this has been, may be referred to almost the whole of modern experimental physiology for his answer.

Nearly all of the present generation of British physiologists have been students in the Leipzig laboratory. While there, they could not fail to acquire a warm personal affection for its director. Simple, kindly, possessed of a genial humor which never wounds, enthusias-

tic in his work, and ever ready with aid and counsel, Ludwig must be beloved by those who work under him: hence, to their pleasure in a worthy bestowal of the Copley medal, English physiologists have the further joy of seeing a beloved master publicly honored. In both these respects they will have many warm sympathizers in the United States. For years the Leipzig laboratory has been the headquarters abroad of young American as well as English physiologists; and at present Ludwig is represented by pupils on the physiological staff of the Harvard medical school, of the University of Pennsylvania, of the Johns Hopkins university, of the University of Michigan, and probably of other American institutions. In fact, so far as physiology is now pursued and taught in this country as a definite independent science, and not as a mere body of more or less dubious dogmas which custom makes it necessary to include in the medical student's curriculum, it is, for the most part, pursued and taught by or under the direction of those who have been Ludwig's pupils. In their name we congratulate the master, and express the hope that he may yet be spared for many years to carry on his work.

WE HAVE had occasion twice during the past year to remonstrate against the methods employed by certain book-dealers in bringing out quasi-scientific books. In June, mention was made of several volumes that appeared without date. In November it was the question of more sincere discrimination on the part of publishers in regard to the quality of the material that they recommend to the purchasing public. Now, the little book on meteorology mentioned in our notes provokes protest against the practice of borrowing illustrations and extracts without acknowledgment of their sources.

There are four plates in the first part of this book, the only pictures it contains; and they are all taken from the work on storms by Blasius. In the 'Scholia' of the second part, there are several papers by well-known meteorologists: some of them are credited to their original place of publication; but several others are appropriated, in a more or less condensed form, with their author's name at the head of each, as if, in distinction to the first, these were written expressly for this book. It may be that the omission of acknowledgment results simply from carelessness; but, in any case, it is not to be lightly excused. Why should not professors demand as much care in these matters from their publishers as from their students?

LETTERS TO THE EDITOR.

Why is water considered ghost-proof?

As a possible partial explanation of the fact referred to by Dr. Edward B. Tylor, in his address before the Anthropological society of Washington (see *Science*, iv. 548, col. 2), of the wide-spread belief among savages 'that water is impassable to spirits,' the obstacle which it presents to dogs in pursuing their prey by scent may be suggested. This latter fact must be well known to most uncivilized races; and the mystery of tracking by scent must furnish a fertile theme for the exercise of the savage imagination, while the scent itself of a human being would be readily attributed to his spirit. Can anthropologists show any 'historical connection' between the fact and the belief?

LESTER F. WARD.

Hollyhock-disease and the cotton-plant.

The hollyhock-disease has been a bane to European gardeners for ten years past. It is one of the most destructive of plant-diseases; being able to kill young plants within a week from the time of its attack, and making sad havoc wherever it appears. It is a parasitic rust (*Puccinia malvacearum* Mont.) to be associated with the rusts of wheat and oats, and is not confined to hollyhocks, but attacks many other members of the mallow family, such as the upright mallow in particular, marsh mallow, German Lavatera, the common weed known as Indian mallow or velvet-leaf, and many others. Winter gives a list of twenty-four species.

The disease was introduced into Europe from Chili in 1869, appearing first in Spain. In four years it had spread through France and the southern portions of Germany and England, reaching northern Germany in 1874, and Ireland in 1875. It has also appeared in Australia and the Cape of Good Hope, but has not yet, in all probability, invaded North America. The plant reported under this name from California is doubtless another species, as I am informed by Dr. Farlow, who has examined Californian specimens, although not those of the original collector. The mention by Burrill of its introduction into this country is an error, as I have learned from the author. A

disease sometimes spoken of in American journals under this name is due to an entirely different cause.

Its introduction from Europe, which is most likely to occur through the importation of hollyhock-seeds, should be guarded against. But a still greater interest attaches to the disease in regard to its possible relation to the future of the cotton industry. The cotton-plant is a member of the mallow family, and, so far as one may judge *a priori*, would fall a ready prey to the disease. It occurred to me to obtain some disease-spores from Europe, and test their growth on cotton; but, fearing the disease might escape from my control, I finally interested my friend, Mr. Charles B. Plowright of King's Lynn, Eng., in the subject, who offered to undertake the necessary experiments.

Mr. Plowright reports, under date of Nov. 26, as follows:—

"Six young cotton-seedlings were, on July 12, infected with germinating-spores of *Puccinia malvacearum*. The plants were quite young, and the spores were applied to the cotyledons. No result.

"Six young cotton-plants which possessed true leaves were, on June 19, infected with *P. malvacearum*. No result. June 29, infected same plants again. No result.

"In July these plants were planted out in the garden; and beside them a healthy specimen of *Malva sylvestris* was also planted. At the beginning of August, four small *Malvae*, affected with the *Puccinia*, were planted so near the cottons and healthy mallow that the diseased foliage of the one touched the healthy foliage of the other.

"Aug. 20. The healthy mallow has become affected with the *Puccinia*: the cottons have not. The plants were left growing together to the end of summer, but the cotton-plants remained free from the *Puccinia* until they died from the cold of autumn some time in October."

It is a relief to find that our apprehensions regarding the dire consequences that might follow the introduction of this destructive rust are without foundation, so far as the cotton-plant is concerned. The mallow family is divided into two tribes; the first including the true mallows, and the second the rose mallows. Among the best-known members of the latter are the shrubby *Althaea*, okra, and cotton. I am unable to find any record of any of this tribe taking the disease, and it is probable that the true mallows only are subject to it.

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Military cetology.

In the exhaustive essay upon brush-making, by Capt. A. L. Varney, in the last report of the secretary of war (vol. iii. p. 190), I find, in connection with much information of interest to the zoölogist, some remarks upon cetaceans which are unique in their way, and show how dangerous it is for one unacquainted with a subject to attempt to instruct others therein. After stating that "whalebone, or baleen, is a horny substance, consisting of fibrous laminae laid lengthwise along the upper jaw of the whale," our author proceeds to give the following information about the order Cetacea in general:—

"Zoölogically, whales, or mammalia of the cetacean order, are divided into two great families, — 'blowing' cetacea, so called from the habit of spouting water through the nasal openings or spiracles in the top of the head; and 'herbivorous' cetacea (*Manati*). The family of 'blowing' cetacea is divided into two tribes, — the tribe of whales (*Balaena*); and the dolphin tribe, distinguished mainly by the size and shape of the head.